REMARKS

Claims 1-54 are pending in this application. Claims 1, 2, 10, 18, and 45 are argued in the Office Action. Claim 1 is independent.

Allowable Subject Matter

The Examiner is thanked for indicating that claims 2, 10, 18, and 45 are allowable.

Drawings

Corrected Drawings were submitted on July 22, 2003 for Figs. 23, 24, and 25. The proposed drawing correction filed March 24, 2003 had been approved in the Office Action of April 22, 2003. However, acceptance of the corrected drawings has not been indicated. **Applicant requests an indication of acceptance of the corrected drawings of July 22, 2003 be made in the next action.**

Claim Rejection

Claim 1 has been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,945,697 (Kuno et al., "Kuno"). Applicant respectfully traverses this rejection.

Summary of the Claimed Subject Matter

The invention of claim 1, in a preferred embodiment, is directed to a variable gain amplifier comprising an amplifying transistor which amplifies an input signal (e.g., Fig. 1: amplifying transistor Q; Fig. 2: signal input transistor 11); and a current path control section which controls a size of the amplifying transistor and

a path of a current through the amplifying transistor (e.g., Fig. 1: current path control circuit C; Fig. 2: current control transistor 12).

The size of the amplifying transistor can be adjusted by controlling the current path through the amplifying transistor. The size of the amplifying transistor is dictated by turning on source current to selected ones of transistors (e.g., transistors 11) making up the amplifying transistor (see paragraph bridging pages 14 and 15). For example, a current flow into a unit circuit, consisting of a signal input transistor 11 and a current control transistor 12, can be cut off by feeding a power voltage to the gate of the current control transistor 12. Thus, the associated signal input transistor 11 does not contribute to the amplification of the input signal. Thus, the "size" of the overall amplifying transistor corresponds to the selected signal input transistors 11 that are turned on.

Kuno

Kuno is directed to a MOS transistor for use in a source follower circuit. The source follower converts a signal charge into a signal voltage and conventionally may include a drive MOS transistor Q1 and a load MOS transistor Q2. A bias voltage Vg is applied to the gate of the load MOS transistor. A problem occurs when the size of the MOS transistor is reduced in an effort to enhance conversion efficiency.

In particular, variation in gate area due to manufacturing tolerances becomes more of a factor when the size of the gate area is reduced (see "Description of the Prior Art"). Variation in channel width leads to variance in the

DC bias of the output voltage from the source follower, leading to an increase in nonuniformity of the conversion efficiency.

Thus, Kuno is directed to an improved MOS transistor that obtains a raised precision that minimizes the DC bias variation in the output of the source follower. In particular, the improved MOS transistor includes channel stoppers 13a and 13b to determine a channel width (paragraph bridging columns 1 and 2).

Differences over Kuno

The Office Action indicates that Kuno's Fig. 5 teaches the invention of claim 1, and in particular, that transistor Q1 teaches the claimed amplifying transistor, and that transistor Q2 teaches the claimed current path control section. Applicant disagrees.

Kuno is directed to a MOS transistor in a source follower, not a variable gain amplifier. The circuit shown in Fig. 5 includes a source follower made up of transistors Q1 and Q2. The source follower of Kuno does not output a variable gain.

Unlike Kuno, the claimed variable gain amplifier includes an amplifying transistor which amplifies an input signal. The drive transistor Q1 of Kuno is not an amplifying transistor.

Unlike Kuno, the claimed invention includes a current path control section which controls a size of the amplifying transistor and a path of a current through the amplifying transistor. Kuno does appear to teach varying the channel width, but in the context of designing a sufficient channel width in order to minimize DC bias variation in the output of a voltage follower. Channel stoppers are used to determine a sufficient channel width. Thus, size of the channel width is a design

constraint, and the final size of the drive transistor Q1 is fixed and does not change.

Applicant submits that though Kuno appears to have similarly named components, i.e., transistors forming a unit circuit, and determines a channel width, the circuit in Kuno is actually completely different from the present invention. Thus, Kuno fails to teach or suggest the claimed variable gain amplifier comprising an amplifying transistor which amplifies an input signal, and a current path control section which controls a size of the amplifying transistor and a path of a current through the amplifying transistor.

Accordingly, Applicant respectfully requests that the rejection be withdrawn.

CONCLUSION

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert W. Downs (Reg. No. 48,222) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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